Quilt Poems

Encoding Craft Traditions as Generative Poetry

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Introduction

Quilt Poems is a generative literature project that finds unexpected common ground between quilting, data, and computational poetry. Beginning as a NaNoGenMo (National Novel Generating Month) entry, the project encodes a library of traditional quilt patterns as structured data, pairs them with a curated word corpus, and uses software to produce visual poems whose form is literally shaped by quilt geometries. This paper walks through the process of translating a tactile, domestic craft tradition into a formal data schema, the interpretive choices that entails, and how that encoded knowledge becomes the skeleton for visual-textual output. The software, written in Lua and fully open sourced, is designed to be generative, in this case meaning the capability of producing infinite unique, printable books of quilt poetry. The project raises questions I'm still sitting with: What does it mean to archive a craft as code? How do pattern-based traditions in fiber arts rhyme with algorithmic thinking? And what is the relationship between the handmade chapbook, printed in a limited edition, and the daily poem site generating new work every 24 hours?

Quilting Context

Patchwork is the process of needle sewing together small pieces, called patches, of fabric into a larger textile pattern. Quilting is the process of stitching through this conjoined layer, binding it to a backing fabric, often with a middle layer. Historically, quilting has been both a practical means of creating blankets for warmth, reusing old clothes for fabric pieces, and as a means of presenting decorative and artistic expression. Particular patterns are spread through community and regional groups, with identifiable patterns particularly celebrated by communities such as Amish quiltmakers and the Gee's Bend quilting community, which have enjoyed widespread exhibition of their work through touring museum exhibitions. ("Gee's Bend Quilts from the Collection")

Historically, weaving has been associated with computational processes, particularly the algorithmic patterns encoded in punch-style cards for use in a Jacquard loom. (Albaugh et al.) A number of sources, both ancient and contemporary, collect weaving patterns, made available for reproduction on looms, replicated by a weaver through counting and replicating patterns manually, or through a process like the Jacquard loom where patterns are 'read' by machine and produce mechanical processes in the machine to automate the creation of the algorithmic pattern. We could say that weaving patterns are

well-documented into various formats of data, that can be used to perfectly replicate these patterns onto new woven textiles.

In contrast quilting patterns are not well-represented at the same level of encoding. Despite particular coherent patterns, the process of patchwork quilting is not purely gridded, and quilt patterns are often represented visually as made up of patterns of triangles and rectangles, among other shapes. (“Pattern and Paradox: The Quilts of Amish Women”) These larger basic units correspond with the “pieces” that make up a patchwork quilt. There is no single common system for encoding basic structures of a quilt for a digital replication.

Situatedness of the artist-poet-quilter

While I primarily think of myself as a media artist incorporating computational processes to make my work, I have previous experience sewing quilts as fine artworks, particularly incorporating reused clothing and found materials. These artworks were presented at galleries and art festivals, and sold as artwork by a gallery. At present I could not be said to be a part of any current quiltmaking community, nor did I learn the process in a traditional family or community apprenticeship model but rather from solo practice and through books and later on collaboratively made projects within my artist community.

Encoding quilts as grids

Drawing from a love of the patchwork quilts of the Gee’s Bend community, as well by Amish quilting traditions, I sought out a method of encoding patchwork quilts into algorithmic patterns for digital transcription and as a source to create new visual artworks inspired by these patterns. In early tests, using the Pico-8 game engine and Lua language, I found coding randomized triangles and squares to produce interesting work, but with enough friction to encoding common patchwork patterns as data as to prevent it from being useful for this task. In short, a regular gridded pattern would more easily translate to an encoding for my taste.

However, inspired by the constrained palette and pixel count for programs in the Pico-8 engine, as well as the extremely tight but productive 5x5 grid of tile creation to create individual patterned blocks, as characters, walls, enemies, etc within the game engine Puzzlescript, I realized it may be possible to design constrained quilt encodings in a grid, not at the pixel level, but at the level of a ‘piece,’ one of the blocks that make up a quilt.

The size of grid selected came about from experimentation.A much larger grid, approaching closer to a pixel-like size, would undoubtedly allow one to get closer to a precise replication of textile quilts. Partly inspired by how in weaving there are various size gridded looms from smaller resolution tablet weaving cards to large room-size looms I started selected the small grid for a first round of quilt encodings. At first, I performed a test of a 5 by 5 quilt patterns, finding it unsuitable for producing distinct and visually

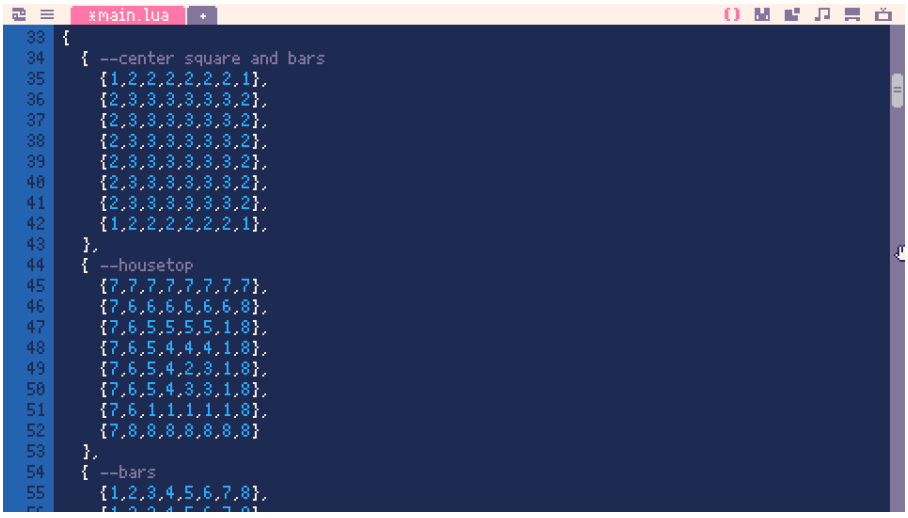
replicable copies of quilt patterns. The most minimal grid size by my eyes was 8 by 8, still minimal, but capable of reproduction at a variety of fidelities, and seeming to be the smallest count that I could visually read for a variety of distinct quilt patterns.

As I had not yet come across a comprehensive repository of quilts to manually encode, I collected sources through articles on the internet and viewing historic quilting books, including through those found on the Internet Archive as well as used book stores.

From the collected sources I manually interpreted the patterns I identified, creating a total of 28 gridded 8 by 8 source patterns, though several are related but distinct variations on previous quilt designs as quilters in particular create new patterns that are seemingly infinite variations on previous designs. (Bales)

Different quilt communities and even different quilters give different distinct names to quilt patterns. From my encodings I selected the names I was most familiar with, or gave an encoding its name based on my own instinct for its description. An example quilt pattern is the Center Square and Bars. A common but simple pattern identified within Amish quilt patterning.

Image 1: Quilt, Center Square and Bars pattern, by unknown Amish maker from Lancaster, Pennsylvania, 1892 from the collection of The Metropolitan Museum of Art.("Quilt, Center Square and Bars Pattern")



You can see my encoding of the Center Square and Bars pattern among other patterns in this excerpt from the quilts.lua file. (Tusman)

Image 2: Excerpt of quilts.lua in Picotron fantasy workstation, a Lua-based virtual machine, showing encodings of various quilt patterns, by the author.

quilts.lua is a Lua library, a single file that encodes quilts within a Lua data table. This data format was selected because it is a native format, simple to parse from within Lua, my chosen language, which

allows me to move smoothly between the Lua-based engines and frameworks and libraries I use: Pico-8, Love2d, L5, Playdate, Picotron and others.

In the example encoding of the Center Square and Bars pattern at this resolution of 8 by 8, the quilt pattern is composed of squares at the same size as a chessboard. Each number represents a different colored square, so in each corner of the Center Square and Bars pattern, numbered 1 in this particular pattern, is a square of a single color. Running along the top and bottom as well as the left and right edges of the quilt pattern is the number 2, showing strips of a second color that flank the quilt. The remaining part of this pattern is the 6 by 6 center square, with each part labeled 3, a third color for this large center square.

Further Encodings

Based on my own research I developed 28 total encodings, from the Amish Square and Bars pattern to Housetop variations, basket and anvil shape patterns. In all cases, the process of identifying distinct quilt patterns, then distilling them into 8 by 8 representations of a grid with numbers representing color blocks was not a precise computer process, nor a result of scanning, machine learning or other purely technological process. Rather, it was the author's individual and likely flawed but handcrafted encoding representations. As such, this quilt encoding library cannot claim a degree of authority or even widespread representation. It is simply one pilot test, one model for translation from an 'analog' craft tradition to a digitization that does not seek to capture a perfect facsimile or archival authority but a related artistic rendering in data. Another attempt at creating digitized quilt representation include PatchProv, a system for designing improvisational quilts in software. (Leake et al.)

What Encoding Doesn't Capture

Observe the variation in color block strips within the Amish quilt from the Metropolitan's collection compared to my simplified 8 by 8 grid. In this example a very thin green strip of fabric edges the complete quilt, not present in all Center Square and Bar patterned quilts and not represented in my 8 by 8 grid encoding. Additionally, there are 2 thin strips on the inside of the center fabric block running vertically, also not represented in the 8 by 8 encoding. Finally, rather than a geometric variation or figuring there is a coloring shade tonal difference. The top red bar appears lighter in shade to the other 3 flanking large red color bars.

While I haven't yet seen the term 'glitch' to describe an abberance where a piece's color varies from its related blocks, or a pattern is seemingly cut and rotated or appeared in fractal variations, I would argue there is an echo of the glitch here or an anticipation of glitching. (Betancourt) Bales describes the fractal patterns and processes of the Gee's Bend quilts as fractals. (Bales) And while a 'glitch' is a visual technical fault by digital process, there is a rhyming of the glitch here as these patterned and seemingly

visually repeating patterns appear to have small variations. Implementing a software-based mechanic that replicates this fractal process could be a future step.

Quilting as Poetic Computation

From encoding the quilts into a data format, I now had the opportunity to use this as a schema for creating new artworks.

I am a longstanding participant in the National Novel Generating Month (NaNoGenMo) event that happens each November since 2013. NaNoGenMo's core requirement is to "generate" a novel through computational processes, inspiring dozens of new works using many techniques each year. The event is inspired by the NaNoWriMo (National Novel Writing Month) that requires authors to write novels of at least 50,000 words, a definition of novel that originator Darius Kazemi found amusingly defined.

The NaNoGenMo requirements do not require that participants specifically create a novel: just that a text output of at least 50,000 words is created. My goal was to create a computational poetry book consisting of generated poems visually laid-out based on the quilt data patterns, with the minimum number of words met.

Just as a quilter must assemble source fabric in order to cut out pieces to be assembled into blocks, pieced together into a quilt top, for constructing my computational quilt poems I needed a corpus of words that could serve as individual blocks. Where in the quilt data individual blocks of color making up an 8 by 8 quilt are presented as a single number in the encoding, I chose that each number in a grid would be a single word. I selected a number of categories of words, many from the Corpora organized by Darius Kazemi, a collection of small datasets of words by categories. (Kazemi) I also created additional text sources, and my final corpora collection contained 18 lists of words, including lists of adverbs, infinitives, metals, rhymeless words, Swadesh words, Shakespearean words, resume words, a list of objects and others.

My quilt generating recipe is as follows:

1. Randomly select one of the quilt patterns
2. Randomly select one word list
3. Randomly assign one word for each digit 1 to 8 (our max number of distinct 'block' types for each quilt
4. Loop through our selected quilt pattern, replacing each digit with its selected word replacement. We do some simple math to find the max length of a word for each column, then use that to add spaces before and after shorter words in that column
5. We use the first two generated words and the quilt pattern name appended for the poem title
6. Then we repeat the process beginning from step 1 again, until we have a collection of generated word poems with a minimum of 50,000 words used.

Generally Analytical Lazy Gal Quilt

generally	generally	generally	generally	generally	generally	generally	generally
analytical	analytical	analytical	analytical	analytical	analytical	analytical	analytical
actually	actually	actually	actually	actually	actually	actually	actually
frantically	frantically	frantically	frantically	frantically	frantically	frantically	frantically
striking	striking	striking	striking	striking	striking	striking	striking
bashfully	bashfully	bashfully	bashfully	bashfully	bashfully	bashfully	bashfully
lightly	lightly	lightly	lightly	lightly	lightly	lightly	lightly
broadly	broadly	broadly	broadly	broadly	broadly	broadly	broadly

Nice Company Checkerboard Quilt

nice	company	nice	company	nice	company	nice	company
company	nice	company	nice	company	nice	company	nice
nice	company	nice	company	nice	company	nice	company
company	nice	company	nice	company	nice	company	nice
nice	company	nice	company	nice	company	nice	company
company	nice	company	nice	company	nice	company	nice
nice	company	nice	company	nice	company	nice	company
company	nice	company	nice	company	nice	company	nice

Image 3: Example generated visual quilt poems.

From NaNoGenMo to Individual Quilt Poems

Following from the creation of the book of quilt poems I created a smaller printed chapbook zine of quilt poems that were distributed at open studios and artist talks, in two editions of 25 each.

Rather than the larger ‘novel’-sized output from NaNoGenMo, this allowed me to select individual favorites for reproduction and sharing. The chapbook contained a colophon, the original quilts.lua encoded data, the main.lua file that creates the quilt poems followed by the selected poems.

Generating large quantities of quilt poems is ludicrously fast with computational processes. Contrast this with the labor required to produce even one hand crafted textile quilt. In one consideration of slowing down to appreciate a single quilt poem at a time I created a website that displays a single Daily Quilt Poem. Making use of the Fengari-Web JavaScript library, it runs a Lua Virtual Machine in the browser, transcoding to JavaScript, allowing me to reuse most of my Lua code. This resulted in a straightforward way to present my computational quilt poems in the browser.

The website Daily Quilt Poem lives at https://leetusman.com/everyday/293/daily-quilt-poem/ and presents a new quilt poem each day as its pseudorandom number generator is seeded by the calendar date.

Smoke Egg Log Cabin Quilt

smoke	egg	hair	who	smoke	egg	hair	who
smoke	egg	egg	who	smoke	egg	egg	who
smoke	smoke	smoke	who	smoke	smoke	smoke	who
who	who	who	who	who	who	who	who
smoke	egg	hair	who	smoke	egg	hair	who
smoke	egg	egg	who	smoke	egg	egg	who
smoke	smoke	smoke	who	smoke	smoke	smoke	who
who	who	who	who	who	who	who	who

Image 4: A Daily Quilt Poem, generated on June 29, 2026.

Further Quilt Pattern Experiments

At this point, my experiments with computationally-derived visual quilt poems made up of quilt pattern data have produced multiple formats including print publications, digital publications and a daily website. The quilt patterns are also used as source material for additional experimental media art projects that are not focused on computational poetry as such, to realms including photo grids and animation. The Daily Quilt Poem continues to output new poetry each day. Today is the Smoke Egg Log Cabin Quilt, for example.

Further iterations and experiments to come include creating new quilt pattern representations at more detailed scales. A provisional test of larger grid sizes such as 48 “pixel” blocks wide within the Lua-based Picotron “Fantasy Desktop” by the creator of Pico-8 appears promising for color-block based representation for example. Fractal-based or glitching mechanics that rotate or combine sections of quilt patterns may contribute more complex, richer visual quilt poems. Tests that combine color blocks with overlaid text are another path for exploration, along with more finely tuned text corpus selection.

References

Albaugh, Lea, et al. “Enabling Personal Computational Handweaving with a Low-Cost Jacquard Loom.” *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* [Yokohama Japan], 2021, pp. 1–10. *DOI.org (Crossref)*, https://doi.org/10.1145/3411764.3445750.

Bales, Judy. “Creating Again and Again: Fractal Patterns and Process in Improvisational African-American Quilts.” *Critical Interventions*, vol. 6, no. 1, Jan. 2012, pp. 63–83. *DOI.org (Crossref)*, https://doi.org/10.1080/19301944.2012.10781417.

———. “Creating Again and Again: Fractal Patterns and Process in Improvisational African-American Quilts.” *Critical Interventions*, vol. 6, no. 1, Jan. 2012, pp. 63–83. *DOI.org (Crossref)*, https://doi.org/10.1080/19301944.2012.10781417.

Betancourt, Michael. *Glitch Art in Theory and Practice: Critical Failures and Post-Digital Aesthetics*. Routledge, Taylor & Francis Group, 2017.

Gee’s Bend Quilts from the Collection. https://www.philamuseum.org/exhibitions/gees-bend-quilts-collection. Accessed 29 June 2026.

Kazemi, Darius. *Dariusk/Corpora*. 23 Feb. 2014, JavaScript. 27 June 2026. *GitHub*, https://github.com/dariusk/corpora.

Leake, Mackenzie, et al. “PatchProv: Supporting Improvisational Design Practices for Modern Quilting.” *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* [Yokohama Japan], 2021, pp. 1–17. *DOI.org (Crossref)*, https://doi.org/10.1145/3411764.3445601.

———. “PatchProv: Supporting Improvisational Design Practices for Modern Quilting.” *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* [Yokohama Japan], 2021, pp. 1–17. *DOI.org (Crossref)*, https://doi.org/10.1145/3411764.3445601.

Pattern and Paradox: The Quilts of Amish Women | Smithsonian American Art Museum. https://americanart.si.edu/exhibitions/pattern-and-paradox. Accessed 29 June 2026.

Quilt, Center Square and Bars Pattern. Collection Search. The Metropolitan Museum of Art, https://www.metmuseum.org/art/collection/search/13891.

T, Lee. *Lee2sman/Generative-Quilt-Poems*. 23 Nov. 2024, Lua. 13 June 2025. *GitHub*, https://github.com/lee2sman/generative-quilt-poems.